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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/431,875	11/02/1999	ATSUHIKO ISHIHARA	0378-0361P	9337

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EXAMINER	
MOE, AUNG SOE	
ART UNIT	**PAPER NUMBER**
2612	

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/431,875	ISHIHARA ET AL.	
	Examiner	**Art Unit**	
	Aung S. Moe	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _10 February 2005_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1,2,4-6 and 8_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _4 and 8_ is/are allowed.

6)☒ Claim(s) _1,2,5 and 6_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 2, 5 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2, and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parulski et al. (5,828,406) in view of Alston (U.S. 4,541,010), Chang (U.S. 5,264,939) and **Yamada (U.S. 6,236,434 B1)**.

Regarding claim 1, Parulski '406 discloses a solid-state image pickup apparatus (Fig. 2) comprising:

an image pickup section (20) comprising: a color separating section including color filters assigned to three primary colors R, G, and B for separating colors of light incident from a desired scene (i.e., see Fig. 4); a plurality of photosensitive cells (i.e., Fig. 3A, the element 66) arranged bi-dimensionally in one-to-one correspondence to said color filters each for transforming light output from a particular color filter to a corresponding signal charge (i.e., see Figs. 3A-4; col. 5, lines 32+);

a plurality of vertical transfer paths (Fig. 3A, the elements 68) each comprising transfer elements arranged in a vertical direction for vertically transferring signal charges fed from adjoining ones of said plurality of photosensitive cells (i.e., see col. 5, lines 35+);

a horizontal transfer path (Fig. 3A/3B; the elements 70, 76, 78) perpendicular to said plurality of vertical transfer paths and comprising transfer elements arranged in a horizontal direction for transferring the signal charges fed from said plurality of vertical transfer paths (i.e., col. 5, lines 32+ and col. 6, lines 5+);

signal reading circuitry (Fig. 2, the elements 30 and 27) for shifting the signal charges from said plurality of photosensitive cells (66) to said plurality of vertical transfer paths (68); and

charge sweeping circuitry (i.e., Fig. 2, the elements 72, 30 and 27) for sweeping out needless ones of the signal charges stored in said plurality of photosensitive cells (i.e., col. 5, lines 40+ and col. 6, lines 25+); and

a mode selecting section for selecting (i.e., Fig. 2, the element 12), when an operation for reading the signal charges out of said image pickup section (20) is represented by a mode (i.e., a still mode), either one of all pixels read mode for reading the signals charges from all of said plurality of photosensitive cells (66) (col. 6, lines 24-65) and a particular pixel read mode (i.e., the Preview mode or Line Skipping mode as discussed col. 6, lines 25+ and col. 7, lines 5+) for reading only the signal charges representative of some of the lines;

a drive signals generating section (Fig. 2, the elements 30 and 27) for feeding horizontal and vertical drive signals (i.e., noted V1 and V2 as shown in Fig. 5-6b) to said image pickup section (20), and providing said horizontal driver signals (i.e., noted H1 and H2 as shown in Figs. 5-6b) with a period shorter in said particular pixel read mode (i.e., the preview/motion mode) than in said all pixel read mode (i.e., A Still mode) (i.e., noted from Figs. 5-6b that a period for the horizontal driver signals H1/H2 for the Apreview/line skipping mode is shorter than the Still mode; col. 6, lines 5-68); and

a controller (Fig. 2; the elements 27) for controlling said drive signals generating section (30) in a particular manner in each of said all pixel read mode and said particular pixel read mode (i.e., see Figs. 2 and 5-6b; col. 6, lines 27+).

Further more, it is noted that Parulski '406 does not explicitly show that the color filters assigned to the color G being arranged in stripes and reading only the color G signals for a particular pixel read mode (i.e., the preview mode).

However, the above-mentioned claimed limitations are well known in the art as clearly evidenced by Alston '010. In particular, Alston '010 teaches the well-known solid-state color image pickup apparatus for operation the two different modes (i.e., the recording mode/a preview mode; see col. 3, lines 65+). Further, Alston '010 stated it is conventionally well-known to use the Green (G) color filter stripes (Fig. 1, the elements 14) in a solid-stated image pickup wherein only the green (G) colors signals are read out for a particular pixel read mode (i.e., the preview mode; see col. 3, lines 20+ and col. 4, lines 5+) so that it would eliminate the need to provide a large storage array or buffer memory equivalent to the resolution of the image sensing array thereby eliminating the need to provide a separate high resolution buffer memory as was heretofore required (i.e., see col. 4, lines 45+).

In view of the above, having the system of Parulski '406 and then given the well-established teaching of Alston '010, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Parulski '406 as taught by Alston '010, since Alston '010 suggested at column 4, lines 45+ that such a modification would eliminate the need to provide a large storage array or buffer memory equivalent to the resolution of the image sensing array thereby eliminating the need to provide a separate high resolution buffer memory as was heretofore required.

In addition, it is noted that Parulski '406 does not explicitly show said mode selection section generating a difference phase of the horizontal drive signal selected from a plurality of signal level in response to a horizontal timing signal fed from the drive signal generating section and a control signal fed form the controller as amended.

However, the above-mentioned claimed limitations are well known in the art as clearly evidenced by Chang '939. In particular, Chang '939 teaches the use of mode selection section (Fig. 1, the elements 37, and 32) generating a difference phase of the horizontal drive signal selected from a plurality of signal level in response to a horizontal timing signal (H1A, H2B and H2) fed from the drive signal generating section and a control signal fed form the controller (64) as amended (i.e., see Figs. 3 and 4; col. 6, lines 19-68).

In view of the above, having the system of Parulski '406 and then given the well-established teaching of Chang '939, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Parulski '406 as taught by Chang '939, since Chang '939 suggested at column 2, lines 5+ that such a modification would provide low cost device for producing a low resolution, real time image for a high resolution camera system thereof.

With respect to previously/newly amendment limitations of claim 1, it is noted that although combination of Parulski '406, Alston '010 and Chang '939 show a plurality of signal reading circuits (i.e., noted the vertical and horizontal drivers and the control circuits as shown in Parulski '406, Alston '010 and Chang '939), one for each one of said plurality of photosensitive cells, for shifting the signal charges form said plurality of photosensitive cells to the plurality of vertical transfer paths (i.e., noted the plurality of vertical transfer paths, i.e., the element 68, as shown in Parulski '406; the elements 22 as shown in Chang '939), Parulski '406 does not explicitly show **the color filters assigned to the colors R and B being arranged diagonally with respect to the color filters assigned to the color G; and each of the plurality of photosensitive cells being shifted in position by half a pitch from adjoining ones of said**

photosensitive cells, and each **one of a plurality of vertical transfer paths offset from each vertical column of the plurality of photosensitive cells** as amended in present claimed invention.

However, the above-mentioned color filter arrangement is well known in the art as evidenced by Yamada '434. In particular, Yamada '434 teaches the use of the color filters assigned to the colors R and B being arranged diagonally with respect to the color filters assigned to the color G (i.e., see Figs. 2-7); and each of the plurality of photosensitive cells being shifted in position by half a pitch from adjoining ones of said photosensitive cells as amended in present claimed invention (i.e., col. 4, lines 15-30); and each **one of a plurality of vertical transfer paths offset from each vertical column of the plurality of photosensitive cells** (i.e., noted the vertical paths 16/17 as shown in Figs. 1-4) as amended in present claimed invention.

In view of the above, having the system of Parulski '406 and then given the well-established teaching of Yamada '434, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Parulski '406 as taught by Yamada '434, since Yamada '434 suggested at column 2, lines 55+ that such a modification would suppress false signals, improve a photoelectric conversion efficiency, and optimize spatial sampling of an image.

Regarding claim 2, the combination of Parulski '406, Alston '010, Chang '939 and Yamada '434 shows wherein said color separating section has a full checker pattern in which the color G is arranged in a square lattice while the color R and B each are diagonally arranged at opposite sides of the color G (i.e., see Figs. 4 and 7 of Parulski '406 and Fig. 1, the element 14 of Alston '010 and Figs. 2-7 of Yamada '434).

Regarding claim 5, Parulski '406 discloses a signal reading method for a solid-state image pickup apparatus (Fig. 2) including an image pickup section (20) including a color separating section having color filters (Figs. 4 and 7) assigned to three primary colors R, G and B for separating colors of light incident from a desire scene, the color filters assigned to the color G, R and B, a plurality of photosensitive cells (Figs. 3A-3B; the elements 66) arranged bi-dimensionally in one-to-one correspondence to said color filters each for transforming light output from a particular color filter to a corresponding signal charge, and charge sweeping circuitry (i.e., Fig. 2, the elements 72, 30 and 27) for sweeping out needless ones of signal charges stored in said plurality of photosensitive cells (i.e., col. 5, lines 40+), said image pickup section (20) transferring the signal charges of said plurality of photosensitive cells in a vertical direction (68) and then in a horizontal direction (i.e., 70, 76, 78); said signals reading method comprising the steps of:

(a) selecting, when an operation for reading the signal charges out of said image pickup section (20) is represented by a mode, either one of all pixels read mode (i.e., Still mode) for reading the signal charges from all of said plurality of photosensitive cells (i.e., col. 6, lines 20-68) and a particular pixel read mode (i.e., APreview/Motion mode) for reading only the signal charges representative of the specific lines (i.e., see Fig. 7);

b) generating drive signals (i.e., Figs. 5-6a/6b) for driving said image pickup section in accordance with said all pixel read mode or said particular pixel read mode selected;

c) storing, in said particular pixel read mode, the signal charge drive from the color signals of the selected lines in response to said drive signals while sweeping out the signals

charges derived from the colors R and B (i.e., noted from Figs. 6a/6b, the fast dump structure 72 is sweeping out the signals charges; see col. 6, lines 30+);

d) effecting a field shift of only the signals charges stored (i.e., see Figs. 6a/6b; col. 6, lines 30+);

e) vertically transferring the signals charges derived form the color signals and subject to the field shift (i.e., Figs. 6a/6b; col. 6, lines 40+); and

f) horizontally transferring the signals charges vertically transferred at a period shorter than a period of time necessary for the signals charges to be read out in said all pixels read mode (i.e., see Figs. 5-6a/6b; col. 6, lines 5-68 and col. 8 lines 40+; noted from Figs. 5-6b that a period for the horizontal driver signals H1/H2 for the Apreview/line skipping mode is shorter than the Still mode).

Further more, it is noted that Parulski '406 does not explicitly show the system and method that include the color filters assigned to the color G being arranged in stripes and reading, storing and vertically transferring only the color G signals for a particular pixel read mode (i.e., the preview mode).

However, the above-mentioned claimed limitations are well known in the art as clearly evidenced by Alston '010. In particular, Alston '010 teaches the well-known solid-state color image pickup apparatus for operation the two different modes (i.e., the recording mode/a preview mode; see col. 3, lines 65+). Further, Alston '010 stated it is conventionally well-known to use the Green (G) color filter stripes (Fig. 1, the element 14) in a solid-stated image pickup in order to perform the steps of: reading, storing and vertically transferring only the green (G) colors signals for a particular pixel read mode (i.e., the preview mode; see col. 3, lines 20+ and col. 4,

lines 5+) so that it would eliminate the need to provide a large storage array or buffer memory equivalent to the resolution of the image sensing array thereby eliminating the need to provide a separate high resolution buffer memory as was heretofore required (i.e., see col. 4, lines 45+).

In view of the above, having the system of Parulski '406 and then given the well-established teaching of Alston '010, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Parulski '406 as taught by Alston '010, since Alston '010 suggested at column 4, lines 45+ that such a modification would eliminate the need to provide a large storage array or buffer memory equivalent to the resolution of the image sensing array thereby eliminating the need to provide a separate high resolution buffer memory as was heretofore required.

In addition, it is noted that Parulski '406 does not explicitly show the step of generating a different phase of a horizontal drive signal being generated in response to a control signal fed from the all pixel read mode **or** the particular pixel read mode selected as amended.

However, the above-mentioned claimed limitations are well known in the art as clearly evidenced by Chang '939. In particular, Chang '939 teaches the step of step of generating a different phase of a horizontal drive signal being generated in response to a control signal fed from the all pixel read mode **or** the particular pixel read mode selected as amended (i.e., see Figs. 3 and 4; col. 4, lines 40-60; col. 6, lines 19-68).

In view of the above, having the system of Parulski '406 and then given the well-established teaching of Chang '939, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Parulski '406 as taught by Chang '939, since Chang '939 suggested at column 2, lines 5+ that such a modification would

provide low cost device for producing a low resolution, real time image for a high resolution camera system thereof.

With respect to previously/newly amendment limitations of claim 5, it is noted that Parulski '406 does not explicitly show the color filters assigned to the colors R and B being arranged diagonally with respect to the color filters assigned to the color G; and each of the plurality of photosensitive cells being shifted in position by half a pitch from adjoining ones of said photosensitive cells, and vertically transferring the signal charges in **a path offset from the vertical column of the plurality of photosensitive cells** as recited in present claimed invention.

However, the above-mentioned color filter arrangement is well known in the art as evidenced by Yamada '434. In particular, Yamada '434 teaches the use of the color filters assigned to the colors R and B being arranged diagonally with respect to the color filters assigned to the color G (i.e., see Figs. 2-7); and each of the plurality of photosensitive cells being shifted in position by half a pitch from adjoining ones of said photosensitive cells (i.e., col. 4, lines 15-30); and vertically transferring the signal charges in **a path offset from the vertical column of the plurality of photosensitive cells** (i.e., noted the vertical paths 16/17 as shown in Figs. 1-4) as recited in present claimed invention.

In view of the above, having the system of Parulski '406 and then given the well-established teaching of Yamada '434, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Parulski '406 as taught by Yamada '434, since Yamada '434 suggested at column 2, lines 55+ that such a modification would suppress false signals, improve a photoelectric conversion efficiency, and optimize spatial sampling of an image.

Regarding claim 6, the combination of Parulski '406, Alston '010, Chang '939 and Yamada '434 shows wherein the step (b) comprises:

g) generating first drive signals for storing, in said particular pixel read mode (i.e., the preview/motion mode as shown in Figs. 6a/6b of Parulski '406), the signal charges derived form the color G (i.e., noted the teaching of Alston '010) while sweeping out the signal charges derived form the color R and B (i.e., see col. 6, lines 25+ of Parulski '406 and col. 4, lines 45+ of Alston '010);

h) generating second drive signals for effecting the field shift (i.e., see Figs. 5-6a/6b of Parulski '406);

i) generating third drive signals for vertically transferring the charges subjected to the filed shift (i.e., Figs. 5 and 6a/6b of Parulski '406);

j) generating drive signals for horizontally transferring the signal charges vertically transferred at a period shorter than a period of time necessary for the signals charges to be read out in said all pixels read mode (i.e., noted from Figs. 5-6b that a period for the horizontal driver signals H1/H2 for the preview/line skipping mode is shorter than the Still mode; col. 6, lines 5-68 of Parulski '406).

Allowable Subject Matter

5. Claims 8 and 4 are allowable over the prior art of record.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aung S. Moe whose telephone number is 571-272-7314. The examiner can normally be reached on Mon-Fri (9-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 571-272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Aung S. Moe
Primary Examiner
Art Unit 2612

A. Moe
June 11, 2005